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THE
PROGRESS OF FRUIT FARMING.

BY
CHARLES WHITEHEAD, F.L.S., F.G.S.,
OF BARMING HOUSE, MAIDSTONE.

SECOND EDITION.

LONDON:
WILLIAM CLOWES AND SONS, LIMITED,
STAMFORD STREET AND CHANCERY CROSS.
1885.

Price Sixpence.

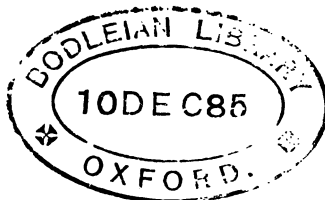
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FROM THE
JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.
VOL. XIX.—S. 8. PART II.

THE PROGRESS OF FRUIT FARMING.

THE increase of the acreage of fruit-land in England, according to the Agricultural Returns, was 26,696 acres between the years 1872 and 1882. It will be seen by an analysis of these Returns that an increase has taken place in twenty-four counties, and a decrease in the remaining counties. The most important additions to the acreage have been made in five of these counties, which have been distinguished for several centuries as fruit-growing counties, viz.—Gloucester, Hereford, Kent, Somerset, and Worcester, in the following order :

NAME OF COUNTY.						Increase of Acreage from 1872 to 1882.*
						Acres.
Hereford	..	..	..	..	..	5944
Kent	..	..	..	..	..	5362
Somerset	..	..	..	..	..	4324
Worcester	..	..	..	..	..	4290
Gloucester	..	..	..	..	..	3251

In Devonshire, which has long been celebrated for its fruit-production,† the increase only amounted to 358 acres in the same period, owing probably to the fact that the many late wet seasons have been especially injurious to the apple-crop in this county. No important additions have been made to the fruit-acreage in any other county which would tend to show that the occupiers of land were seriously thinking of adopting fruit-culture as a possible means of improving their position. This is somewhat remarkable, and is additional evidence of the fact

* The Agricultural Returns for 1884 show that there was increase in the acreage of fruit-land since 1882, of 145 acres in Hereford, 633 in Kent, 668 in Somerset, 1302 in Worcester, and 646 in Gloucester. The whole acreage of fruit-land in Great Britain for 1884 was 194,723 acres, as against 187,553 acres in 1882.

† Records show that apples were cultivated in Devonshire in 1520.

that English farmers are slow to embark upon what they term "new-fangled" schemes. It is not by any means because the soil and climate of other counties are unsuitable for fruit-growing that fruit-cultivation has not been adopted, for almost all sorts of fruits are successfully grown in the gardens in all but the most northern districts; and in all but these there are parts, and large parts, of all the counties of England where the most useful fruits might be successfully grown. But it is difficult to induce farmers to make experiments of this kind, even though experts may tell them that all the conditions essential to ensure success are present; and they shake their heads dubiously when they are reminded that the kinds of fruit suitable for market purposes are produced abundantly in their own kitchen-gardens close to their houses, and that it would pay to cultivate them upon an extended scale. Besides the prejudice against new undertakings, farmers proper, in many cases, object to become fruit-growers, as many object to become vegetable-growers, because it is not their legitimate business, which is, they say, to produce corn and meat, milk, butter, cheese, and wool, as their forefathers did. Many have not the capital to spare for planting fruit-trees, whose return is somewhat slow. Here and there a landowner has done this, notably Lord Sudeley, in Gloucestershire, to whose enterprise detailed references will be made: but a grand opportunity has not been generally taken advantage of in this country. In the meantime the foreign cultivators have been equal to the occasion, and have extended the acreage of fruit-land enormously, and are sending quantities of fruit into the English markets, increasing year by year. A calculation has been made as to the time for which the food production of this country would keep its mighty population from starvation if its ports were closed to the importation of all foreign supplies. A few weeks alone, it is said, would reduce the English to the famished condition of a besieged army. How long, it may be asked, would the 187,553 acres of fruit-land in Great Britain supply its inhabitants with fruit, and the various confections and compositions made from fruit? They would be utterly insufficient; as even now, with the very extensive consignments from various lands, fruit is sometimes so dear as to be beyond the reach of all but the rich. Taking into consideration the extraordinary increase in the demand for fruit for eating in its raw state, for cooking, for the making of jam, and for other purposes, during the last twenty-five years, and more particularly during the last ten years, the addition to the acreage of fruit-land in England of 26,696 acres since the year 1872, is ridiculously small. It is generally acknowledged that fruit, vegetables, and milk, are becoming

year by year more essential elements of the diet of all classes of the community. The temperance movement also has already increased the demand for these articles of diet, and will increase it considerably more, especially as regards fruit; for persons who freely indulge in alcoholic stimulants rarely take fruit or jam, or conserves made of fruit. An important proportion of the increased fruit consumption is due to the demand for jam for home and foreign consumption. Jam is becoming a common article of food throughout the country. As our dairies cannot furnish butter for those who are unable to give from 1s. 5d. to 1s. 8d. per lb. for this luxury, they use jam for themselves and their children. This can now be bought in most village grocers' shops at from 6d. to 8d. per lb., owing mainly to the energy of French, Belgian, Dutch, German, and American fruit-growers. Jam-factories are being established in various parts of this country, and new processes have been introduced to help and improve the manufacture of jams and preserves of all kinds. There is yet a vast difference in jam. The real jam is made of good freshly-picked fruits, which are not mashed up into a mess, but are preserved whole, so that specific fruits may be identified. Beach's jam is of this character, and is acquiring a deserved reputation. It is made of fresh fruit grown in England, and is not boiled down, but steamed. Glucose is avoided, and nothing but the finest sugar is used, and no adulteration is practised, as the fruits remain whole and perfectly distinguishable. But there are jam-makers and jam-makers. There are jam-makers and smashers, although the latter title is repudiated as a calumny upon the trade. The former make it as careful housekeepers make it; the latter mix up fruit of all kinds and qualities into a heterogeneous compound. The first of these take sound, fresh, whole fruit. The others boil down over-ripe and under-ripe fruit of all sorts, particularly apples of low quality, sometimes mixed with marrows and other vegetables when fruit is scarce; and thus with a few seeds and essences make any jam to order. For jam-making fruit of all qualities and descriptions is cleared off in a wonderfully rapid manner. When there is a short crop, the demand for jams and preserves sends up the prices of fruit to a figure far beyond the reach of ordinary consumers, as in 1881, for example, when damsons and plums were making 4d. per lb. wholesale, and black currants from 4½d. to 5d. per lb. In full fruit seasons, jam-makers buy up fruit, and, having reduced it to pulp, put it into large jars or vessels of various kinds, without sugar. If the air is carefully excluded, this pulp will keep for some time, until a scarcity of fruit happens again. It is, in fact, the adoption of the principle of ensilage to fruit. This is adopted

in other countries. Large quantities of apricot pulp are sent from France at an average price of about 5*d.* per lb. A few fruit-growers in England have tried this practice in abundant seasons, and have been enabled to keep their fruit until it was wanted. Some jam-makers take the pulp from the fruit-growers. Others pulp the fruit themselves, and it is satisfactory to find that in some large centres of production jam-factories have been established to which the producers can send both fruit and pulp. In not a few districts, where jam-factories do not exist, it is becoming the custom to sell fruit by contract in large quantities to agents, or to principals, of jam-factories, and to fruit-dealers. Another good feature in the fruit-trade is that growers are getting more in the habit of sending their fruit direct to the retail shops in London and in other large towns; and of supplying co-operative stores, either by contract, or by agreement to take current market prices, thus, as in the former case, saving the expense of the middleman. It is also the practice of some growers to consign their choicest dessert-fruit, carefully and tastefully packed, to retailers in large cities. It is most desirable, in the interest of consumers and producers, that this system should be largely extended. Not a few gentlemen also, having greenhouses and hothouses, and a staff of gardeners, like to turn an honest penny, and combine the useful with the beautiful, and send the choicest fruits and flowers to some of the chief London shops.

Notwithstanding the importation of fruit from divers parts of the world, the prices, taking the average of seasons, are very high, and the prices of fine fruit for dessert purposes place it beyond the means of all but those who have plenty of money. It may seem strange that fruit should be so dear as it was in 1882, for example, when it is seen that the amount of raw fruit sent into this country during that year was 5,000,861 bushels, of the value of 2,199,158*l.*, independently of the large quantities of fruit in the form of pulp, or dried by the sun or by artificial processes. The annexed return (p. 7) will show the amount of raw fruit sent into England in 1871 and in 1882 respectively, and the various countries from which it was sent.

When it is remembered that the population of Great Britain was over thirty-two millions at the recent Census, the amount of the importation of raw fruit appears comparatively of small importance. It is estimated that the annual average amount of fruit produced in this country is not more than 9,000,000 bushels. But not nearly all this is available for actual consumption as food, as the apples and pears grown for cider and perry must be deducted, and these form a considerable portion of the whole—a *third at the least*—seeing that in the cider-making counties *par*

NAME OF COUNTRY.	1871.		1882.	
	Number of Bushels.	Value.	Number of Bushels.	Value.
		£		£
Germany	69,519	22,104	425,010	160,966
Holland	160,392	59,542	535,158	213,130
Belgium	276,286	95,822	937,853	301,510
France	354,606	214,542	1,191,606	553,370
Portugal, Azores, and Madeira	73,979	57,081	270,394	150,648
Spain and Canary Islands ..	59,712	48,795	794,822	438,713
United States	56,441	40,604	566,888	250,866
British North America ..	55,150	37,004	203,114	87,859
British West India Islands ..	10,063	10,750	12,171	10,355
Other Countries	12,520	9,863	36,903	13,877
Channel Islands	..	..	26,992	17,864
Total	1,128,568	596,107	5,000,861	2,199,158*

excellence, viz. Devon, Hereford, Somerset, and Worcester, there are 95,521 acres of fruit-land out of the total number of 187,553 acres of fruit-land in the United Kingdom. There are no statistics showing what proportion of this fruit-land, or orchard-land, as it is for the most part, produces cider and perry-fruit, though no doubt it forms a large part of its yield. In Gloucester, again, cider is extensively made. A little is made in seasons of heavy crops in Kent, but it is not of first-rate quality, and the quantity made is becoming smaller year by year. In Dorset, Monmouth, Salop, and Wilts, the fruit-land consists mainly of apple-orchards planted with trees of second-rate kinds of fruit, the greater part of which is made into cider for the farm hands.

With regard to the importation of foreign fruit, much of this arrives in the English market before the home-grown fruit is ripe, therefore it does not come directly into competition with it—at least in the case of most of the “soft” fruits, as currants, gooseberries, and strawberries. It is different, however, with apples, of which large quantities are sent from Canada and the United States, and reduce the value of English apples considerably in some seasons. Greengages and plums are occasionally sent from Belgium, Holland, and France in such quantities as to materially affect the prices, especially of second-rate samples. The finest foreign plums come from mid-central France, before English plums are ripe. Those that come into competition with English plums are of a common description produced in Belgium, Holland, and Normandy, but they tend

* In 1883 the number of bushels of raw fruit imported into this country was 4,912,400 bushels, valued at 1,934,440*l*. Australasian countries appear for the first time as exporters of apples to England in 1883.

to depreciate values in the same way as a supply of sprats makes herrings cheap. Large quantities of indifferent plums, known as "Swetchens," are brought from Holland, by water, from Amsterdam and Rotterdam, at excessively low rates. These are sold at St. Katharine's Wharf direct from the steam-boats, and are used principally for jam and cooking purposes, making from $1\frac{1}{4}d.$ to $1\frac{1}{2}d.$ per lb. Greengages of poor quality are also sent from Holland, making from $1\frac{3}{4}d.$ to $2d.$ per lb. A few are taken for eating, though the great bulk of this fruit finds its way into the jam-factories. Cherries arrive first from Algiers and Spain, long before English cherries are ripe. These are rather colourless and flavourless, and of a common character. When these are over, very much better cherries arrive from Avignon and other parts of southern and mid-central France, and are succeeded by ordinary growths from Angers and Normandy, which are brought to London at something under half a farthing per lb. for carriage; while for cherries sent to London from Sittingbourne, in East Kent, and Maidstone, in Mid-Kent, about 40 miles, the charge for railway carriage amounts to close upon a farthing per lb. Black currants and red currants come from France, Holland, and Belgium only a very short time before these fruits are ripe in England; they are much inferior in quality to the English, as are the gooseberries which are imported in considerable quantities from France. It is evident from the appearance of these fruits sent from foreign countries that the soil and climate are not nearly so well adapted for their production as those of this country, and that home-growers need not fear that they will be beaten, as far as quality is concerned, in respect of them, or, indeed, of any of the soft fruits. In the matter of pears, however, the case is different. French pear-growers undoubtedly produce better fruit than any others. The pears that are grown in the districts round Nantes and Angers, and in parts of mid-central France, are finely shaped, of taking appearance, and excellent flavour. Pears begin to arrive from France about three weeks before English pears are ripe, and the supply frequently lasts until the ensuing spring.

Producers of pears in France are most careful and diligent in their cultivation, and in the selection of the best sorts, and those to follow in a regular order of ripening, and they do not crowd them into the market directly they are picked, as is too much the fashion with the home pear-growers. Pears are grown in France in many fashions,—upon standards, bushes, pyramids: upon cordons, lateral, oblique, and diagonal; *en gobelet*, *en vase*, *en touffes*, and in other ways. The pruning is attended to with great pains and skill by the small proprietors who are the chief producers of fruit in France, among whom "exists a widespread

intelligence, and a keen sense of what is profitable and useful for the land cultivated by them as a garden of necessity." *

The greater part of the fruit that is exported from France is collected by agents or dealers, who attend certain markets, dépôts, or centres to which the fruit is brought by the growers, and sort it, and classify it, and carefully pack it for the English markets. Sometimes railway arches are used for receiving and packing the fruit. Much judgment and skill are employed in sorting and packing, so that buyers in London have great confidence in the consignees. Certain trade-marks become known and inquired for day after day, and fruit is frequently sold without being seen, the buyers being quite satisfied with the note of advice. It has become so general to consign fruit to England, that it is stated that frequently the markets in French towns are badly supplied. A friend who has lived in France for many years says that the increase in the production of fruit during the last twenty years is astonishing; yet to obtain his supplies he was compelled to send into the fruit market before 5 o'clock A.M., or the fruit would have been all sold and cleared off for consignment to England. A French writer, skilled in horticulture and agriculture, remarks that the cultivation of fruit in France has greatly increased, but that the demand has by no means been satisfied. He estimates that more than twenty-three millions of pounds of fresh fruit are annually consumed in Paris alone in various forms: although the Parisians are by no means a fruit-eating people. He counsels the French cultivators to plant fruit-trees, and in answer to the question which is frequently asked, "If all the world plant fruit-trees, what is to become of the fruit?—it will fetch a poor price:" he replies: "This is a gross error; the more the production increases the greater will be the consumption. We produce ten times more fruit than we did forty years ago, and has the price decreased in any degree?" Then he goes on to advise the cultivators not to centre their efforts upon producing wheat and oats upon land that will grow fruit. "What," he asks, "will corn pay him?" He answers, "Nothing. The cultivator is a manufacturer (*fabricant*), and it is his duty to abandon a certain production that does not pay for another that will pay." † This advice has been taken, as any one can clearly see by the increase in the importation of fruit from France in the last few years. It is cited here, as it is peculiarly applicable to English farmers, upon many of whose farms fruit that would pay might be cultivated in the place of corn

* 'Report on Fruit Culture on the Continent, 1868.' By the Rev. T. Collings Brehaut.

† 'Arbres Fruitiers. Culture et Taille rationnelles et économiques.' Par V. Lebeuf.

that does not pay. Let America grow the wheat as long as she will, while English farmers endeavour to turn their land to better account. We have allowed foreign fruit-cultivators to steal a march upon us. Though the importations of fresh fruit have been quadrupled since 1871, the increase in the acreage of English fruit-land during this period is equal only to about 16 per cent. Foreign producers discovered, some years back, that there is a practically unlimited market for fruits. Their fruits have improved in appearance and quality in the past ten years, though, with the exception of apples and pears, they are not equal to the fruits grown in England, whose soil and climate are suitable for the production of fine-flavoured and good-sized fruit.

It must be asked, seeing that the British cultivator has these advantages, whether he lacks energy and the spirit of enterprise, or capital? Or is it owing to the nature of the English land laws that he does not adapt his modes and systems to meet altered and altering circumstances, like the Continental and the American farmers? Not only are the French, the Belgians, and the Germans, increasing the area of fruit-land, and improving their methods of cultivation, but the Americans are also planting fruit, and are adopting, with characteristic zeal, new and improved systems of packing and preserving it. In the Report of the American Commissioner of Agriculture for 1878, it is stated that there were more than two millions of acres under cultivation as apple-orchards, and that in twenty years the value of the products had increased from 1,320,000*l.* to over 10,000,000*l.* "The abundance of the fruit-crop," the Commissioner writes, "is one of the most gratifying results of the progress of agriculture in this country. The demand for fruit in the markets at home and abroad has been equal to and is increasing with the supply. The prices have been generally remunerative both to the grower and the dealer, and yet low enough to be within the reach of all. The daily use of fruit as food by our people is greatly to be desired."* Besides apples and many other small fruits, the peach-crop of the United States is estimated at the annual value of 11,500,000*l.*; so that it is not surprising that there is occasionally a superabundance of fruit, especially of peaches and apples, upon which pigs are fed. This waste has been in a great degree obviated by the ingenuity of the Americans in preserving the fruits and drying them. At Baltimore particularly, as well as in other cities which are centres for the accumulation of fruit, large establishments have been built and furnished with the most improved machinery

* 'Annual Report of the United States Commissioner of Agriculture, 1878.'

and appliances for the rapid drying and evaporation of the watery parts of fruits. By an ingenious process the water is slowly separated from the solid parts, which at the same time undergo a chemical change, the acid and the starch being converted into grape-sugar. The Commissioner of Agriculture in the Report alluded to says of this: "The proof of the pudding is in the eating, and it is said that an apple-pie made from fruit evaporated by these processes cannot be distinguished from one made from fresh fruit, and yet only one-half of the quantity of sugar is required to sweeten it; and the same fact is true in regard to tomatoes, and all fruits and vegetables."*

Iron stoves and machines constructed on the principles described above, for drying fruit, but portable and costing only about 15*l.*, are used in many districts in the country far from towns. These will, it is said, thoroughly and perfectly dry as much fruit as a family can peel and slice in a day. All kinds of salads and delicate vegetables—such as onions, peas, asparagus, celery, Lima beans—are preserved by these new processes fresh and "dehydrated," like the fruits of all seasons of the year, for all the markets of the world, returning, when placed in water, at any time when desired for use, to their original fulness, colour, flavour, and other properties. "In short," to use the words of the Commissioner of Agriculture, "the trade in 'dehydrated' and preserved vegetables and fruits of all kinds has assumed enormous proportions, giving employment to thousands of persons, realising valuable profits, and supplying business through every artery of trade."

Not only this, but the trade in fresh vegetables and fruits has been lately increased in an astonishing degree by the adoption of refrigerators on the railway-cars and steam-boats, by which these products are conveyed to all parts of the United States, as well as to foreign countries.

Much fruit is produced in Canada. The acreage of fruit-land has been extended largely in the last fifteen years, and the greatest interest is taken by the Government and the farmers themselves in the promotion of this industry. The main part of the fruit-land is in Ontario, or Western Canada, in which it is said that any fruits can be grown that are produced in the temperate zone. There is a large Fruit-growers' Association in Ontario devoted to the improvement of the cultivation, packing, and preserving of fruits. In 1880 a Commission was appointed by the Lieutenant-Governor to inquire into the progress of agriculture, and in the Report of the Commissioners most valuable information as to fruit is contained, which is not only most

* *Op cit.*, p. 385.

useful and deeply interesting to Canadian cultivation, but also to all other fruit-producers. Very fine apples are grown in Ontario, better it is alleged by the Canadians than those that are grown in the United States. It is said that when Canadian apples are good the Americans buy them, and brand them "American;" and when they have indifferent samples of their own growth, they brand these "Canadians." Canadian apples have undoubtedly a great reputation in the English markets. A large fruit-grower in Ontario, in his evidence before the Commission, says: "There is nothing to prevent our apples from competing successfully with the English apples in England, if they are properly sent. We have beaten them in their own market with the Ribston Pippin. It sells in England at 3*l.* per barrel."* Another apple, called the "Swayzie Pomme Grise," grown chiefly in the Niagara district, has made the highest price obtained for Canadian apples in England, as much as 5*l.* per barrel having been made in Covent Garden Market.† This apple, of fine aromatic flavour, was probably introduced into Canada, where it has been long known, from France. André Leroy mentions it as a dessert-apple of the highest quality in his 'Dictionnaire de Pomologie,' and Dr. Hogg says that it is a first-rate apple, and Forsyth believes that the trees were brought from Canada into this country. Not only do the Canadians exercise the greatest skill in the cultivation of apples, but they understand the art of storing them. The most approved plan, according to the evidence given to the Commissioners, is to place them in cellars well drained and ventilated, in which the temperature is maintained at from 32 to 35 degrees.

In a lecture upon fruit-growing in Massachusetts, by Mr. Slade, he said that "one of the least expensive, most efficient and commodious fruit cellars that I ever examined, comprised a portion of a barn cellar. It was under a hay-barn a hundred feet in length, with the walls and floor cemented. There were double doors at the entrance, and the two windows, north and south, were protected by shutters. I was in this cellar early in the spring, and found the temperature at 38°, while outside it was 63°. The bins were filled with apples, and although they exposed to view 125 surface yards, I failed to find a single specimen showing any signs of decay. To manage a fruit cellar successfully requires skill, judgment, and a constant supervision. The light should be admitted sparingly, the air kept pure, and the temperature low and uniform." Mr. Brown, of Lunenburg, remarked, in the discussion upon this lecture, that

* 'Report of the Ontario Agricultural Commission of 1880.'

† A barrel contains 3 bushels.

he had not yet succeeded in keeping apples in large quantities all the year round, but that he could keep them up to June or July.*

The apples are put upon wooden shelves in some cases, though many prefer to pack them in the barrels as they are picked, and to store them in these until they are wanted. Re-packing for market is well done. Choice dessert-apples are wrapped singly in coloured tissue-paper, and the bottoms, sides, and tops of the barrels are also lined with tissue-paper. Apples of ordinary quality are packed in buckwheat chaff, and care is taken to take out the culls and any fruit that is unsound or specky. The following description of the selection and packing of this fruit will, it is thought, give many valuable hints to English growers:—"If apples are to be packed in the orchard," says one of the witnesses before the Ontario Commission, "a tent should be put up to shade the fruit from the sun, with a table under it; nail strips of wood round it, to keep the fruit from rolling off. Cover it with woollen cloth, so that the pickers may empty their baskets without injuring the fruit; let the packers select the fruit, rejecting every apple that is under size, spotted, or wormy, or deformed in any way. Don't be tempted to put medium and large-sized apples in the same barrel. Pick the apples carefully, lay them down, don't throw them the whole length of the arm into the basket so that they will rattle against each other, empty them gently upon the table for selection."† The reason why Canadian and American apples make such high rates is, that they, as a rule, come to market in admirable order and in regular succession, and they frequently arrive when the supply of English apples is exhausted. It is a very weak point in the English system that the fruit-growers, and especially the large fruit-growers, do not pay sufficient attention to the storing, packing, and selecting fruit for market. Indeed, many of the large growers do not store it all, their great object being to get rid of it as quickly as possible. This entails an enormous waste in the case of apples and pears, because they are bought by persons, in most instances, who have neither capital nor any means of storing. The apples are roughly handled by the labourers while full of juice, and while their skins are tender; no pains are taken in sorting. They are roughly packed and banged about, while yet unripe, in frequently shunted luggage trains, so that they positively are unfit for keeping, and therefore they must be sold for speedy consumption, or for jam-making. Thus much fine dessert-fruit is sacrificed. It is absurd to say that English fruit will not keep as well as that of America and Canada if it

* 'Report of the Secretary of the Massachusetts Board of Agriculture for 1881.'

† 'Report of the Ontario Agricultural Commission of 1880,' p. 54.

is properly treated. It is equally absurd to say that England cannot produce as good apples as these countries, and that their fruit is deliberately preferred. English fruit-growers should not fold their hands and allow Transatlantic energy and perseverance to take quiet possession of the trade. A few changes only are necessary. Certain improvements in the system should be made, to effect which we might well take a leaf out of the book of our American cousins. These remarks apply not only to apples, but also to soft fruits. If it is desired to retain the present market for these, and to extend their production, as it might be extended far beyond its present limits, something like the American plan must be adopted, either of having central preserving factories for canning, drying, and preserving the fruit in various ways, and for boiling down pulp without sugar, and keeping it until there is a demand, and for making jam; or that the growers themselves should have these appliances, or combine to establish them in convenient centres. England has a vast advantage over other countries in the preserving of fruit with sugar, and in the manufacture of jam—that is, fruit boiled down or steamed down with sugar—on account of the cheapness of sugar, caused by the action of free-trade. In the United States the price of sugar is from 6*d.* to 8*d.* per lb. In France the price ranges from 5*d.* to 6*d.* per lb., and in Germany, Holland, and Belgium, it is relatively dear. Partially preserved fruits come from all these countries. They are not preserved in sugar, but are merely dried by the sun or by artificial processes. It is necessary to apply sugar to the great bulk of the preserved fruit that is sent from America, before it is cooked or eaten. English growers have also this advantage over foreign growers, in being able to send their fruit comparatively fresh to the jam-manufacturers. It is most essential to the production of really good jam that the fruit should be in a good state, not sweated nor bruised in long transits. English fruit, fresh, whole, and ripe, is therefore vastly preferred by the makers of the best jams to Continental fruit which has been heated, and has lost all its freshness before it reaches the coppers; and it is believed that jams, warranted to be made from English fruit in the heart of fruit-producing districts, would be taken by the public in preference to all others. Considering these advantages, the manufacture of jam could be largely extended in this country if fruit-growers would produce plenty of fruit, and join together to put up suitable buildings for converting it into pulp or jam. Lord Sudeley, who has lately planted fruit-trees most extensively upon his estate in Gloucestershire, has, with much foresight, turned some farm-buildings into a convenient place for manufacturing jam and

preserving fruits upon a large scale, or for pulping them, or for packing them in a fresh state for market, so long as the market prices are profitable. Now if it pay, as it assuredly will pay, to have a pulp and jam factory upon 300 acres of fruit-land upon Lord Sudeley's estate, it would certainly be more profitable and advantageous to all concerned to establish factories upon a larger scale in neighbourhoods where there are thousands of acres of fruit-land, as, for example, in or near Maidstone, and in or near Sittingbourne, and in or near Farningham, the respective centres of the fruit-growing industries of Mid, East, and West Kent. Attempts were made to start a jam-making company in Maidstone in 1881; but it failed, as the fruit-growers and land-owners did not evince the slightest interest in the undertaking. In Lord Sudeley's case a barn and other buildings have been turned into a factory at a comparatively small cost. This has been let to Mr. Beach, the well-known manufacturer of pure jam, for ten years, who has arranged to take all the fruit grown on this estate, at fixed rates, and will either steam it down, or pulp it, or sell it fresh, as he may deem expedient. This factory is now in working order, and was inaugurated in the summer of 1882 by a capital crop of strawberries, estimated at 10 tons. About 100 tons of fruit were grown on the estate in 1882, which is a capital quantity, considering that no fruit-trees were planted until the autumn of 1880. The expense of the carriage of fruit in this case is saved, also the commission of salesmen, which are most important items in seasons of large crops and when fruit is cheap, and amount to from $\frac{1}{4}d.$ to $\frac{1}{2}d.$ per lb., and even more where the market is distant. In these jam-factories, other modes of preserving fruit might be adopted besides that of making jam, such as that of bleaching and drying apples, which holds in the United States and Canada. "A fruit-drying establishment," says a witness before the Ontario Commissioners, "has been recently started in St. Catherine's, with a capacity to dry 150 bushels of apples a day. The apparatus used consists of an upright frame or box built over a furnace, and on each side there is a belting like a straw carrier. As the fruit rises on the slabs, it is subjected to the hot air of the furnace. The temperature required is from 160° to 170° . The fruit comes out all dried, and is packed in 50 lb. boxes."*

Without any doubt the insufficient means for the distribution of fruit tend to lower prices to the growers, and to prevent a more general increase of the acreage of fruit-land. Gluts occur

* 'Report of the Ontario Agricultural Commission, 1880.'

from time to time in some of the large fruit markets, entailing considerable losses upon producers. This is not by any means an indication that there is too much fruit-land in the country, but that the system of selling it is wrong. As it has been pointed out in a former article in this 'Journal,'* it may happen that at Covent Garden fruit may be dirt-cheap, while at St. John's Wood the usual high figures are ruling. This is the direct result of the fashion of consigning fruits of all kinds as fast as they ripen to a few central markets; a most extravagant fashion, and advantageous neither to the producers nor to the consumers. It is believed that the fruit-trade is conducted upon as unsound principles as the fish-trade, whose rottenness has been recently exposed. The difference between the prices paid to the producers and those paid by the consumers is unreasonably great. A direct supply to the consumers or to retail shops is urgently wanted. This would not be difficult with respect to the finer fruits and hard fruits. It is now done to some extent in Kent, and to a considerable extent in Worcestershire. Many of the fruit-growers in the famous Evesham district advertise their fine plums in the 'Times' and other papers. It is very frequently a great boon to numbers of housekeepers to know where to get good fruit both for eating and preserving, and especially where it is offered at a fair price. Some of the Co-operative Supply Associations afford admirable media for the distribution of fruit, and contract with the growers to furnish them with fruits in due season. The Parcel Post offers admirable advantages for the distribution of fruit, and will enable those who prefer their fruit fresh to have it direct from the growers day by day.† Contracts for this purpose will be made with growers; and while the charges of commission agents and of retailers will be avoided, the fruit will arrive comparatively fresh, not having been exposed in markets and shops, and not having been picked over by various hands more or less dirty. Convenient packages, either baskets or boxes, for juicy fruits and for harder fruits will be necessary. These will probably soon be forthcoming, and it is fully expected that a very large trade will be carried on, if the growers promptly seize the opportunity.

In the case of apples and pears it is most imperatively necessary that the growers should change their practice, and store

* "Fruit Growing in Kent." By Charles Whitehead, vol. xiii. 2nd Series, R.A.S.E. Journal.

† The low rates now charged by the Railway Companies for small parcels, by reason of the competition of the Post Office, will also much expedite the distribution of fruit.

the best eating and cooking apples as the Americans and the Canadians store them, and supply the markets as they ripen. If they wish to compete successfully with foreign producers, this must be done. Inferior apples, which are not wanted for cider, or for which there is no demand for mixing up with other fruits for jam, should be dried after the American plan, either in thin slices called "chips," or "sliced fruit," or as "cored quarters," or "uncored quarters." In the counties where cider and perry are made, apples and pears of all kinds can be utilised when there is a glut in the market; though this has not happened for some years. The demand for well-made cider and perry has perhaps decreased locally in a degree, owing to the labourers being better able to afford to buy beer, and the preference for it among them; but the general demand has increased at least 50 per cent. Considerable quantities are sent to Ireland to be distilled into whiskey. "Champagne cider," a sparkling well-made cider of wine-like quality and appearance, is largely and profitably manufactured in parts of Devonshire, and meets with a ready sale. Much improvement is required in the making of cider, even in the reputed cider districts, and in turning it to the best account. A good deal of cider is made in America; and vinegar, which is said to be scarcely inferior to the best white-wine vinegar, is extensively produced from it in America and Canada. A better kind of cider is also made in New Jersey, and is sent to New York to be turned into champagne. The area of land in England which yields fruit fitted for making really good cider is limited, being confined to certain strong loamy and loamy clay soils of the Old Red Sandstone formation, in parts of Devonshire, Herefordshire, Worcestershire, and Somersetshire. Cider is made in other counties, as Dorsetshire, Gloucestershire, Hampshire, Kent, and Shropshire; but it is of indifferent quality, and the amount made is gradually decreasing, as beer is preferred. It is quite a mistake to suppose that good cider can be made in any district where apples grow plentifully, and that the same kinds of fruit will make equally good cider wherever they can be grown. The Firewhale, Skyrmes' Kernel, Cockagee, Styre, Redstreak, Thousand Pound, Duffing, and other apples famous in Herefordshire and Somersetshire for their cider-making qualities, would not make much better cider in Kent or Dorsetshire than the ordinary native sorts. Nor is it the fault of the manufacture that the Herefordshire, Hampshire, and Kentish cider is comparatively thin and flat. It is because the soil is not suitable for the production of this cider-fruit. As the finest Golding hops can only be produced upon certain soils confined to few districts, so apples and pears

suitable for the finest cider and perry can only be grown in peculiar places. In these the growers have practically a monopoly, and might, it is believed, make more of this than they do at present, and improve the product by adopting better processes of manufacture. Good bottled-cider is dearer than the finest bottled-beer and stout. Perry is still dearer, and sometimes it is impossible to get it good. In Devonshire the proportion of cider-fruit to dessert-fruit is about 90 per cent. Competent authorities state that the cultivation of the Devonshire orchards remains almost as it was a century ago. The trees are so close together that the grass under them is almost worthless, and they are in far too many cases unpruned, moss-covered and decaying. A few growers have recently planted or filled up orchards with new sorts of sour apples, which, blossoming late, are more likely to escape the May frosts. They are probably also induced to do this in consequence of the demand for common apples for jam and preserve-making, and the saving of trouble and risk which cider-making entails, as the fruit is sold by the ton on the trees to the agents of the jam-makers. New sweet sorts, of a late habit, have also been planted for cider, to avoid the action of spring frosts. In Somersetshire there has been rather more movement in the introduction of new sorts, and considerable additions to the acreage, in which the trees have been judiciously selected, more carefully planted, and not put so closely together.

In Worcestershire fruit-bushes have been extensively planted, either alone, or with plums, damsons, and apples over them. Plum and damson-trees have been preferred generally to apples, as coming to bear more quickly. The sorts chiefly planted are the Pershore, Egg, Victoria, Early Prolific, with gooseberries and black currants under them. The extension of the fruit acreage has been larger in Herefordshire in the last ten years than in any other county, and mainly consists of grass-land planted with apple and pear-trees of approved sorts for cider-making and dessert purposes. Heading old trees has been carried out here and there, and grafting with new quick-bearing kinds. One enterprising landowner planted several acres with Lord Suffield apple-trees, an early cooking apple, much grown in Kent, and considered as good as the Keswick Codlin by many persons; but finding they did not do so well as he wished, he headed them and grafted them with the Ecklinville Seedling, a cooking apple of vigorous growth and a free bearer, whose fruit ripens by the end of August, at a time when there is no foreign competition. These trees, grafted in 1881 with grafts not so thick as a pencil, had fruit upon all of them in 1882.

This apple is not generally known; when it is, it will without doubt be largely planted.* There are in this county, and in the western part of Worcestershire, many orchards in a wretched condition, just as in Devonshire and Somersetshire, with closely interlaced trees spoiling the grass beneath and bearing fruit only on their upper branches. It is not satisfactory to note that so much of the finest fruit-land in the kingdom, situated in these cider-making counties, is in a sadly neglected state, and not producing a tithe of what it should and would if it were properly cared for.† However, there are signs that this is being altered. A few landowners and tenants are setting an example which, it is hoped, may be generally followed. Here and there, also, fruit-bushes have been planted, chiefly gooseberries and black currants, which thrive remarkably well in the better soils of this county. The recent plantations of fruit in Gloucester principally consist of plum and damson-trees, with black currants and gooseberry-bushes planted under them. In Kent, also, plum, and damson-trees of the Crittenden sort, have been extensively planted with gooseberry and red-currant-bushes upon the lighter soils, and black-currant-bushes upon those more heavy and clayey. A good deal of land has been planted with black currants in the Weald of Kent. Cherry orchards have been extended in East Kent, and apple-trees have been put in in various parts of the county. The cultivation of raspberries has largely increased, especially in the Sevenoaks and Farningham district, and in that near London, where strawberries are also abundantly grown. Near Southampton large additions have been made to the strawberry plantations, and the cultivation of this fruit is increasing in Cheshire, Cornwall, and Scotland, and in other districts remote from towns. The facilities of railway transport render it possible to supply customers at long distances with fresh fruit packed in boxes containing punnets. In a most interesting and instructive work recently published in America, entitled 'Truck Farming at the South,' ‡ it is stated that in Norfolk, Virginia, the largest strawberry farm in the world is located, one cultivator having 250 acres planted with this fruit. Shipments are made to New York and other

* Another fine apple of brilliant colour, and a good bearer,—the Worcester Pearmain—is being largely grown in many fruit-growing districts. This apple is ripe in September. The trees are hardy and good bearers, and do well as bushes.

† In a much-quoted article in 'Macmillan's Magazine' for August, 1879, this passage occurs. "Is it not piteous to see in some of our counties the large old trees, picturesque certainly at all times, and gloriously beautiful when laden with their blossom, dying away for want of proper manuring and pruning, and producing in the best season only small and inferior fruit?"

‡ 'Truck Farming at the South. A Guide to the raising of Vegetables for Northern Markets.' By Dr. Oemler. New York.

Northern towns, and high prices are made, as the fruit comes early.

A favourite way of planting fruit on the heavier Kentish soils is to put apple and damson-trees alternately with hops, the trees being 18 feet apart in the rows, and the rows 24 feet apart. After fourteen or fifteen years the hops are grubbed, and the land is laid down to permanent pasture. This is a good method on land where hops will not do well for more than from twelve to twenty years, as in parts of the Weald of Kent, Herefordshire, Sussex, and Worcestershire. In some cases bush trees, or dwarf, trees of apples, pears, plums, damsons, and cherries have been planted, and the practice is gradually extending. It is being adopted by fruit-growers near London, and generally in gardens where vegetables are grown, and to some extent by fruit-farmers. These, as well as pyramids, take up but little space, come into bearing directly, and grow fine fruit. As a description of these trees and of their advantages was given in a late number of this 'Journal,'* it will not be necessary to allude to them further here.

Seeing that planting land with fruit-trees improves its value in an important degree, and for a long period, it is strange that landowners have not largely embraced so good an opportunity of increasing the value of their estates. It is exceptional to find any one who has done this upon a large scale. Lord Sudeley, to whom reference has previously been made, is the only landowner who has taken up the question in a thorough and business-like manner. He has already planted 300 acres, and is intending to plant 200 acres more at once. The land is a fairly free-working, moderately good soil on the Lias formation. It was deeply steam-ploughed and well manured, and standard trees of apples, pears, cherries, plums, and damsons were put in 16 feet apart: 3000 apple-trees were planted of the best sorts, including Lord Suffield, Keswick Codlin, Grenadier, Cox's Orange Pippin, Cellini, Warner's King: 812 pear-trees have already been put in—Beurré de Capiaumont, Easter Beurré, Louise Bonne, Jargonelle, Beurré d'Amanlis, Doyenné d'Été, and other choice varieties. There are 32,000 plum-trees of 44 different kinds, such as Diamond, Pond's Seedling, Early Orleans, Greengage, Victoria, Autumn Compôte. Of damson-trees, there are 9000, nearly half of which are the sort known as Crittenden's, so largely grown in Kent, and the remainder are the Shropshire Prune, Cheshire, Common Prune, and Black. Only 522 cherry-trees have been hitherto put in, as Lord Sudeley is not quite certain as to

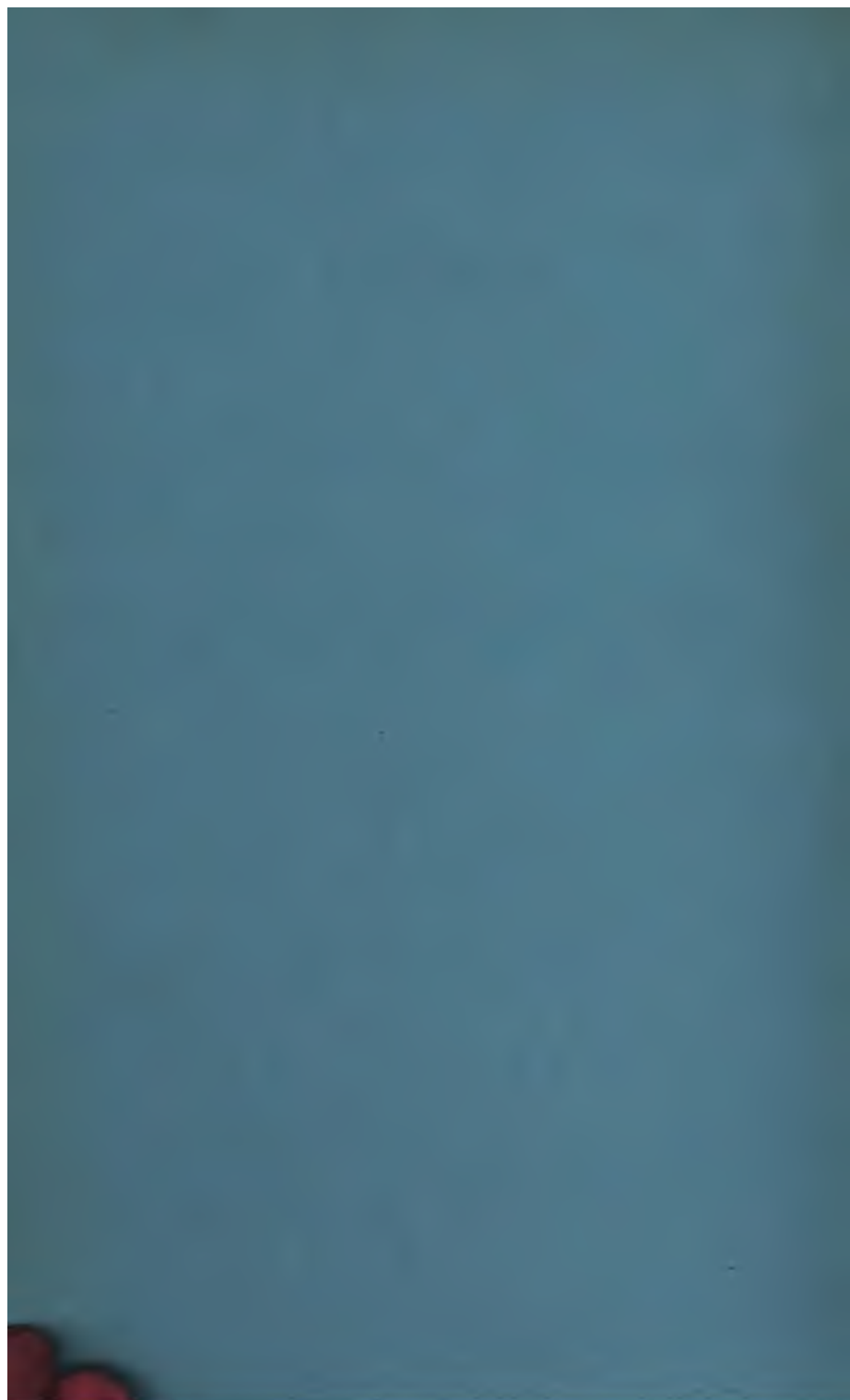
* "Hints on Vegetable and Fruit Culture." By Charles Whitehead. Vol. xviii. 2nd Series, R. A. S. E. Journal.

whether they will flourish at Toddington. These are of the best kinds, such as the late and early Bigarreau, Black Heart, Kentish, and Flemish, and at present are looking very well. Gooseberry or currant-bushes, and strawberry-plants, are set between the standards, and in some cases raspberry-canes are put between the gooseberry and currant-bushes. There are over 50 acres of black currants, raspberries, and strawberries, by themselves, without standards. There are 100 acres of strawberry-plants in all, and 60 acres of raspberry-canes. Some of the apple-trees are pyramids, which do very well. Lord Sudeley has not yet planted bush-trees in any large quantity, but he intends to plant 80 acres of plums in this way, by which the expenses of staking are avoided, and injury from wind, and these trees come into bearing more quickly than standards. The strawberries are the kinds known as the Stirling Castle and the American Scarlet, brought from Isleworth, where they are highly esteemed for preserving. Gooseberry-bushes number 130,000, and consist of no less than 45 varieties. Those, however, which have been planted for the main crop are the Warrington, Lancashire Lad, Lancashire Prize, Crown Bob, and Whitesmith. No less than 228,000 black-currant-bushes have been put in of the leading kinds, such as Lee's Prolific, Baldwin's Black, Black Naples, and Prince of Wales. Black currants appear to thrive well in the soil and climate of Toddington, and bid fair to be fertile sources of profit, for no fruit is in greater demand, or gives a better return, when the bushes are planted on suitable land and properly managed. The raspberries are chiefly Carter's Falstaff; and the red currants the Raby Castle and Scotch Red. Those who know anything about fruit-growing will say that nothing could be more judicious than the selection of the sorts of the various fruits; and those who have seen the manner in which the plantation has been formed, the cultivation, the Jam Factory—which has been described above, making the grower independent of markets—and the general arrangements, hold that nothing could have been better conceived and carried out. It is unique. There is nothing like it in this country in point of extent and order. There may possibly be larger fruit farms in America, but none like it, as it were, in a ring fence, and with such a varied assortment of fruits. Belts of poplars, Scotch firs, and other quick-growing trees have been placed round the plantation to shelter it from the prevailing winds. Beds of osiers have been formed on the banks of the little stream Isbourne, which have taken so well that all the baskets required for the fruit are now made on the estate. Ten acres more are to be planted at once with osiers. A nursery for raising trees and bushes has been formed in a convenient and well-sheltered spot,

where standards, pyramids, bush-trees of all sorts and sizes are seen, well-grown, well-trained, and worked upon the most approved stocks, as well as all descriptions of fruit-bushes. This is most economical in the first cost of the trees, and prevents possible loss and disappointment through getting trees that are not true to name, or that have been badly worked and trained, and starved on poor land, or land exhausted by continuous cropping. It is a great mistake to think that it is better to have young fruit-trees and bushes from poor soils. Like all young things under the sun, they require generous nurture, or they become stunted and prone to canker and premature decay. The owner of this plantation got his fruit-trees from the very best sources and paid full prices, and is rewarded by having a perfectly vigorous and healthy lot of trees and bushes; so much so, that in 1882, among the 40,000 plum and damson-trees, there were not five in a thousand that had gone wrong. The selection of fruit-trees is a most important factor in the success of fruit-plantations. Many who have been inspired with the laudable intention of planting fruit have been estopped with grief, because they had not courage enough in the first place to give fair prices for the best sorts of trees, strong and healthy; nor in the second place to carry out the planting thoroughly well. To succeed in this, as in most other agricultural ventures, not a little capital and no end of judgment are essential. It makes one gnash the teeth to note the manner in which some set about fruit-growing, who buy whatever trees come to their hands most easily, and above all, most cheaply, and stick them in a pasture, putting a few thorns round them to keep animals off. Probably no stakes are provided, and on passing by two years after, it is found that the trees are barked and bitten, that they are twisted and bent in every way, and the would-be fruit-grower declares in disgust that he has had enough of this game. Or another sets the trees on arable land in pretty much the same fashion, and goes on ploughing and harrowing and sowing almost as if they were not there, and wonders that they have become in two years or so, cankered, distorted, stunted objects. A third plants standards on ordinary arable land, and puts bush-fruits beneath them as thickly as he can, and crops the interstices with mangolds, potatoes, cabbages, until the trees bear, not giving manure, or no extra manure, wholly ignoring the fact that the fruit-trees require every atom of fertility that the soil and the heavens above can supply. Naturally the results of these experiments prevent the extension of fruit-growing in the neighbouring districts. On the other hand, the Toddington plantation is a standing example of success, and should serve to encourage waverers and those disheartened.

It will be gathered from the foregoing pages that rather more attention is now being paid in this country to fruit-growing, and that some progress has been made during the past few years both as regards planting fresh land and, in a degree also, the improvement of existing orchards and fruit-plantations. That this recent increase in the plantations is utterly inadequate and insufficient goes without saying ; while the amount of improvement to the existing orchards and fruit-plantations must appear ridiculously small to those who know the state in which thousands of acres are still allowed to remain with the trees unpruned, covered with moss and lichens, and the ground unmanured. It is high time that this state of things were changed, and that fruit-growing were seriously adopted by British agriculturists.





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